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Scientific Areas of Integrated Review Groups (IRGs)

For a listing of the Scientific Review Officer and membership roster for each study section, click on the study section roster under the study section name within an IRG listed below or go to the [study section index](#) (study sections listed alphabetically) and click on the specified roster next to the name of the study section.

Cell Biology IRG [CB]

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- [Biology and Diseases of the Posterior Eye \[BDPE\]](#)
- [Cell Structure and Function Study Section \[CSF\]](#)
- [Cellular Signaling and Regulatory Systems Study Section \[CSRS\]](#)
- [Intercellular Interactions Study Section \[ICI\]](#)
- [Membrane Biology and Protein Processing Study Section \[MBPP\]](#)
- [Molecular and Integrative Signal Transduction study section \[MIST\]](#)
- [Nuclear Dynamics and Transport Study Section \[NDT\]](#)
- [Cell Biology SBIR/STTR Study Section](#)
- [Cell Biology and Development Fellowship Study Section \[F05\]](#)

Biology and Diseases of the Posterior Eye [BDPE]

[\[BDPE Membership Roster\]](#) [\[BDPE Meeting Rosters\]](#)

The Biology and Diseases of the Posterior Eye (BDPE) Study Section reviews applications focused on the development, structure, function, and diseases of the retina and posterior portion of the eye. Specific areas covered by the BDPE Study Section:

- Basic research focused on the neural retina, retinal pigmented epithelium, choroid, and retinal blood vasculature: anatomy, physiology, biochemistry, biophysics, pharmacology, genetics, and cell and molecular biology.
- Phototransduction processes and adaptation mechanisms in rod and cone photoreceptors.
- Photoreceptor outer segment renewal.
- Retinal circuitry and the interconnections between different classes of retinal neurons that mediate visual information processing.
- The function of retinal glial cells.
- Basic and clinical research for the study of retinal degenerative and neovascular diseases such as Retinitis Pigmentosa, Age-Related Macular

Degeneration, Diabetic Retinopathy, Retinopathy of Prematurity, etc. in animal models and patients.

- Applications of imaging techniques and visual function testing for the study of the retina and its diseases in animal models and patients.

Study Sections with most closely related areas of similar science:

[Anterior Eye Disease \[AED\]](#)

[Central Visual Processing \[CVP\]](#)

[Development-2 \[DEV2\]](#)

[Neurogenesis and Cell Fate \[NCF\]](#)

[Genetics of Health and Disease \[GHD\]](#)

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Cell Structure and Function Study Section [CSF]

[\[CSF Membership Roster\]](#) [\[CSF Meeting Rosters\]](#)

The new Cell Structure and Function Study Section will review applications that focus broadly on elucidating basic molecular mechanisms of cells and tissues. These applications emphasize nuclear architecture, cytoskeletal dynamics, membrane traffic, organelle biogenesis, cell and organelle motility, exocytosis, endocytosis, and intercellular targeting of proteins. These topics are investigated using cell biological, biophysical, molecular, biochemical, morphologic and structural approaches and employing various model systems including bacteria, yeast, flies, worms, plants, cultured cells and mice. Specific areas include:

- Cytoskeletal and nuclear dynamics; functional and biophysical studies of actin and microtubule filaments, motors and cargos, and specialized structures including cilia and flagella
- Nuclear architecture and chromatin structure function, including nuclear matrix components, nuclear envelope, nucleoli, subnuclear organelles, lamins, telomeres and centromeres
- Organelle biogenesis (for example mitochondria, chloroplasts, peroxisomes and lysosomes/vacuoles, Golgi), including organelle maintenance, proliferation, segregation, and dynamics
- Cellular trafficking and nuclear transport, targeting, translocation, and processing of newly synthesized proteins and vesicular cargos
- Chromosome movement, spindle structure and dynamics, cytokinesis
- Mechanical properties and forces of cells, cell motility, and cell adhesion, extracellular matrix interactions with the cytoskeleton, adhesions, and membrane trafficking components

Study sections with most closely related areas or similar science listed in rank order are:

[Synapses, Cytoskeleton, and Trafficking \[SYN\]](#)

[Molecular Genetics C \[MGC\]](#)

[Membrane Biology and Protein Processing \[MBPP\]](#)

[Cellular Signaling and Regulatory Systems \[CSRS\]](#)

[Intercellular Interactions \[ICI\]](#)

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Cellular Signaling and Regulatory Systems Study Section [CSRS]

[\[CSRS Membership Roster\]](#) [\[CSRS Meeting Rosters\]](#)

The Cellular Signaling and Regulatory Systems (CSRS) study section reviews applications that focus on the initiation and execution of programs that control cellular homeostasis and physiology. A distinguishing characteristic of these applications is an emphasis on signaling networks and the coordination of processes related to cell proliferation, survival, and growth.

- Cell cycle regulation, mitosis, meiosis, checkpoint controls and regulation by ubiquitination.
- Proteolytic mechanisms associated with cell cycle, senescence and death.
- Programmed cell death and apoptosis, particularly their regulation in the context of stress, growth, and transformation.
- Proliferation and growth control by the nucleus; signaling pathways regulating transcription.
- Integrative cell physiology, e.g., stress, clocks, cellular modeling; cell differentiation and transformation.
- Basic studies of cytokine signaling.
- Application of state-of-the-art technologies such as imaging and computational modeling of cellular signaling networks

Study sections with most closely related areas of similar science listed in rank order are:

[Molecular and Integrative Signal Transduction \[MIST\]](#)

[Intercellular Interactions \[ICI\]](#)

[Membrane Biology and Protein Processing \[MBPP\]](#)

[Molecular Genetics A \[MGA\]](#)

[Molecular Genetics B \[MGB\]](#)

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Intercellular Interactions Study Section [ICI]

[\[ICI Membership Roster\]](#) [\[ICI Meeting Rosters\]](#)

The Intercellular Interactions [ICI] Study Section reviews applications concerned with processes associated with cell growth, proliferation, differentiation and higher order complexity in tissues and in development. Overall, emphasis is placed on how cells interact with both their environment and with neighboring cells in human and animal model systems. Specific areas covered by ICI:

- Cell migration, cell adhesion, cell organization and morphogenesis as related to tissue organization and development including stems cells and tumor cells.
- Crosstalk between adhesion receptors, flow of extracellular signals between distinct cells types and cell populations, signaling and mechanotransduction pathways and regulated proteolysis at the cell surface.
- Carbohydrates and proteoglycans in cell-cell adhesive structures, in signal transduction, in development and in pathogenesis and immunity.
- Cell surface adhesive structures in relation to the cytoskeleton, cell polarity and cell proliferation, differentiation and survival.
- Biology of the Extra Cellular Matrix (ECM).
- Intercellular communication: Regulation, assembly and function of channels, transporters and gap junctions

Study sections with most closely related areas of similar science listed in rank order are:

[Cell Structure and Function \[CSF\]](#)

[Development-2 \[DEV2\]](#)

[Tumor Microenvironment \[TME\]](#)

[Arthritis, Connective Tissue and Skin \[ACTS\]](#)

[Musculoskeletal Tissue Engineering \[MTE\]](#)

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Membrane Biology and Protein Processing Study Section [MBPP]

[\[MBPP Membership Roster\]](#) [\[MBPP Meeting Rosters\]](#)

The Membrane Biology and Protein Processing [MBPP] Study Section reviews applications primarily concerned with protein synthesis, processing, maturation, targeting and degradation as well as membrane structure, function and trafficking. These topics are investigated using cell biological, molecular, biochemical, morphologic, electrophysiological and structural approaches and employing various model systems including yeast, flies, worms, plants, cultured cells and mice. Specific areas covered by MBPP include:

- Molecular regulation of vesicle-mediated trafficking along the secretory and endocytic pathways with an emphasis on the mechanisms of cargo sorting as well as vesicle formation, targeting and fusion
- Regulation, functions and mechanisms of the ubiquitin/proteasome system
- Mechanisms and regulation of protein synthesis, processing, folding (chaperones), quality control (ERAD), targeting, and degradation
- Post-translational modifications with an emphasis on glycosylation, ubiquitination, lipidation and phosphorylation
- Membrane biogenesis, structure, and function, with an emphasis on the organization and interactions of proteins, carbohydrates, and lipids in cell membranes; metabolism and trafficking of lipids; and function of lipid domains
- Organelle biogenesis, structure, function and dynamics with an emphasis on chloroplasts, mitochondria and peroxisomes
- Transport of small molecules across membranes via channels, transporters and gap junctions

Study sections with most closely related areas of similar science listed in rank order are:

[Synapses, Cytoskeleton, and Trafficking \[SYN\]](#)

[Macromolecular Structure and Function B \[MSFB\]](#)

[Cell Structure and Function \[CSF\]](#)

[Biochemistry and Biophysics of Membranes \[BBM\]](#)

[Molecular Genetics A \[MGA\]](#)

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Molecular and Integrative Signal Transduction study section [MIST]

[\[MIST Membership Roster\]](#) [\[MIST Meeting Rosters\]](#)

MIST reviews focus on basic molecular mechanisms of cellular signaling. The applications are on the biochemical and structural mechanisms of signal transduction, including G-proteins, seven-transmembrane protein (7TM) coupled receptors, and their regulation. MIST also reviews the associated kinases, phosphatases and lipid signaling mechanisms and cross-talk with other pathways. Integrative studies may involve a variety of organisms that advance the field whether uni- or multi-cellular, bacterial or mammalian. Specific Areas include:

- Biochemical and structural mechanisms of receptor signal transduction, including G-proteins and 7TM receptors.
- Protein-protein interactions among signaling molecules.
- Serine and tyrosine protein kinases associated with signal transduction mechanisms.
- Protein phosphatases associated with signal transduction mechanisms.
- Second messengers including lipid signaling molecules.
- Related metabolic studies including drugs and inhibitors.
- Regulatory mechanisms controlling signaling including regulator of G-protein signaling (RGS) proteins.
- Calcium signaling mechanisms including structure/regulation of calcium channels and cellular organization of calcium signals.
- Computer simulations and modeling of signaling complexes and pathway components.

Study sections with most closely related areas or similar science listed in rank order are:

[Cellular Signaling and Regulatory Systems \[CSRS\]](#)
[Vascular Cell and Molecular Biology \[VCMB\]](#)
[Cellular and Molecular Immunology A \[CMIA\]](#)
[Cellular and Molecular Immunology B \[CMIB\]](#)
[Cellular Aspects of Diabetes and Obesity \[CADO\]](#)

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Nuclear Dynamics and Transport Study Section [NDT]

[\[NDT Membership Roster\]](#) [\[NDT Meeting Rosters\]](#)

The Nuclear Dynamics and Transport [NDT] Study Section reviews applications primarily concerned with nuclear aspects of mitosis, cell cycle control, cell proliferation, nuclear architecture and trafficking into and out of the nucleus. Signaling pathways that converge on the nucleus are also considered. These fields are investigated using cell biology, molecular, genetic, biochemical, or computational approaches. Specific areas covered by NDT:

- Chromosome movement, spindle structure and dynamics, and role of cytokinesis in mitosis
- Proliferation and growth control by the nucleus
- Cell cycle regulation and checkpoint controls
- Nuclear matrix components
- Microtubules, filaments, motors and cargoes
- Nuclear envelope and transport processes
- Signaling pathways that target the nucleus
- Telomere structure, function and regulation

Study sections with most closely related areas or similar science listed in rank order are:

[Cell Structure and Function \[CSF\]](#)
[Cellular Signaling and Regulatory Systems \[CSRS\]](#)
[Cellular Mechanisms in Aging and Development \[CMAD\]](#)
[Molecular Genetics A \[MGA\]](#)
[Molecular Genetics B \[MGB\]](#)

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Cell Biology SBIR/STTR Study Section

[\[CB \(10\) Roster\]](#)

The CB Small Business SEP [CB (10)] reviews grant applications that develop and apply innovative technology for analysis of cellular processes, including cell imaging and flow cytometry, cell preservation, biosensors, and tissue engineering. Examples of specific areas are listed below.

- Microfluidic systems for high-throughput evaluation of cell function
- Nanotechnology including nanoparticle drug delivery systems, protein design and engineering, including non-viral gene delivery systems
- Emerging technologies for cell imaging and data mining, processing and analysis
- Technologies for cell culture including cell preservation, electroporation, development of single-use perfusion, cell sorting
- Innovative embryonic stem cell technologies, discovery, manufacturing and commercialization of emerging new technologies in human embryonic stem cell research for use in drug discovery
- Molecular genetics including transgenic agricultural products.

Study sections with most closely related areas or similar science listed in rank order are:

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Cell Biology and Development Fellowship Study Section [F05]

[[F05 Roster](#)]

The Cell Biology and Development Fellowship Study Section (F05) reviews applications in the broad areas of molecular, cellular and developmental biology when the research focus is to understand basic principles of cell structure, function, regulation and differentiation. The study section encompasses the scientific disciplines covered by the Cell Biology (CB) IRG and the Biology of Development and Aging (BDA) IRG. Examples of specific areas covered are:

- Biogenesis, organization, and functions of the plasma membrane and endomembrane organelles, including transmembrane transport, vesicular transport, macromolecular trafficking, and autophagy.
- Cell adhesion, cell polarity, cytoskeleton and cell motility. Extracellular matrix, including its biogenesis, organization, and interactions with the cell surface.
- Cell cycle and cell growth regulation, cell senescence and cell death (apoptosis), mitosis, meiosis, cytokinesis, telomeres.
- Developmental cell biology, including cell fate determination, cellular basis of embryonic patterning, developmental regulation of gene expression, and cell differentiation, germ and stem cell biology.
- Protein stability and turnover, including chaperone function and ubiquitin-based degradation and related processes, signal transduction at the cellular level.
- Gene expression and its regulation, including chromatin structure, transcription, RNA processing, translation, and RNA stability.
- Nuclear organization, including chromosomal organization and nuclear import and export.
- Anterior and posterior eye biology (retina and lens).

Study sections with most closely related areas of similar science listed in rank order are:

Genomics, Genetics, DNA Replication, and Gene Expression (F08)
Biochemical and Biophysical Sciences (F04B)
Brain Disorders and Related Neuroscience (F01)
Oncology (F09)
Chemical and Bioanalytical Sciences (F04A)

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